

What is claimed is:

- 1 1. A machine-implemented method, comprising:
2 receiving one or more key values from a first process that executes in a first virtual
3 operating system environment (VOSE) of a plurality of VOSEs controlled by
4 a single operating system kernel instance;
5 selecting, from a plurality of statistical data structures, a set of one or more statistical
6 data structures that are associated with the one or more key
7 values; determining whether any statistical data structure in the set of one or
8 more statistical data structures is associated with a VOSE in which the first
9 process executes; and
10 if a particular statistical data structure in the set of one or more statistical data
11 structures is associated with a VOSE in which the first process executes, then
12 sending, to the first process, statistical data that is stored in the particular
13 statistical data structure.
- 1 2. The method of claim 1, further comprising:
2 if no statistical data structure in the set of one or more statistical data structures is
3 associated with a VOSE in which the first process executes, then preventing
4 statistical data that is stored in statistical data structures in the set of one or
5 more statistical data structures from being sent to the first process.
- 1 3. The method of claim 1, further comprising:
2 receiving, from a second process, a request to mount a file system;
3 in response to receiving the request, performing steps comprising:

4 mounting the file system, thereby producing a mount;
5 establishing an association between the mount and the particular statistical
6 data structure;
7 determining in which VOSE of the plurality of VOSEs the second process
8 executes; and
9 establishing an association between the particular statistical data structure and
10 a VOSE in which the second process executes.

1 4. The method of claim 1, further comprising:
2 establishing an association between a central processing unit (CPU) and the particular
3 statistical data structure;
4 establishing an association between the CPU and a resource pool;
5 receiving, from a second process, a request to bind a particular VOSE to the resource
6 pool; and
7 in response to receiving the request, establishing an association between the particular
8 statistical data structure and the particular VOSE.

1 5. The method of claim 1, further comprising:
2 receiving the one or more key values from a second process that executes in a global
3 operating system environment (OSE) that comprises the plurality of VOSEs;
4 determining whether any statistical data structure in the set of one or more statistical
5 data structures is associated with the global OSE; and
6 if the particular statistical data structure is associated with the global OSE, then
7 sending, to the second process, statistical data that is stored in the particular
8 statistical data structure.

1 6. The method of claim 1, further comprising:
2 receiving the one or more key values from a second process that executes in a second
3 VOSE of the plurality of VOSEs;
4 determining whether any statistical data structure in the set of one or more statistical
5 data structures is associated with a VOSE in which the second process
6 executes; and
7 if the particular statistical data structure is associated with a VOSE in which the
8 second process executes, then sending, to the second process, statistical data
9 that is stored in the particular statistical data structure.

1 7. The method of claim 1, further comprising:
2 receiving a request to create a second VOSE within the plurality of VOSEs;
3 in response to receiving the request to create the second VOSE, creating a second
4 statistical data structure; and
5 establishing an association between the second statistical data structure and a first set
6 of key values that typically are associated with a statistical data structure in a
7 non-partitioned OSE;
8 wherein all statistical data requests that are (a) received by processes executing within
9 the second VOSE and (b) for statistical data that is associated with the first set
10 of key values cause the operating system kernel instance to return statistical
11 data that pertains only to the second VOSE.

1 8. The method of claim 7, further comprising:
2 receiving a request to create a third VOSE within the plurality of VOSEs;

3 in response to receiving the request to create the third VOSE, creating a third
4 statistical data structure; and
5 establishing an association between the third statistical data structure and a third set
6 of key values that typically are associated with a statistical data structure in a
7 non-partitioned OSE;
8 wherein all statistical data requests that are (a) received by processes executing within
9 the third VOSE and (b) for statistical data that is associated with the second
10 set of key values cause the operating system kernel instance to return
11 statistical data that pertains only to the third VOSE;
12 wherein the third VOSE is separate from the second VOSE; and
13 wherein the third statistical data structure is separate from the second statistical data
14 structure.

- 1 9. A machine-implemented method, comprising:
2 receiving, from a process that executes in a first virtual operating system environment
3 (VOSE) of a plurality of VOSEs controlled by a single operating system
4 kernel instance, a request for a list of statistical data structures;
5 determining in which VOSE of the plurality of VOSEs the process executes;
6 selecting, from a plurality of statistical data structures, a set of one or more statistical
7 data structures that are associated with a VOSE in which the process executes;
8 and
9 sending, to the process, a list of statistical data structures that are in the set of one or
10 more statistical data structures.

1 10. A machine-readable medium, comprising:
2 instructions for causing one or more processors to receive one or more key values
3 from a first process that executes in a first virtual operating system
4 environment (VOSE) of a plurality of VOSEs controlled by a single operating
5 system kernel instance;
6 instructions for causing one or more processors to select, from a plurality of statistical
7 data structures, a set of one or more statistical data structures that are
8 associated with the one or more key values;
9 instructions for causing one or more processors to determine whether any statistical
10 data structure in the set of one or more statistical data structures is associated
11 with a VOSE in which the first process executes; and
12 instructions for causing one or more processors to send, to the first process, statistical
13 data that is stored in a particular statistical data structure in the set of one or
14 more statistical data structures, if the particular statistical data structure is
15 associated with a VOSE in which the first process executes.

1 11. The machine-readable medium of claim 10, further comprising:
2 instructions for causing one or more processors to prevent statistical data that is
3 stored in statistical data structures in the set of one or more statistical data
4 structures from being sent to the first process if no statistical data structure in
5 the set of one or more statistical data structure is associated with a VOSE in
6 which the first process executes.

1 12. The machine-readable medium of claim 10, further comprising:

2 instructions for causing one or more processors to receive, from a second process, a
 3 request to mount a file system;
 4 instructions for causing one or more processors to execute, in response to receiving
 5 the request, instructions comprising:
 6 instructions for causing one or more processors to mount the file system,
 7 thereby producing a mount;
 8 instructions for causing one or more processors to establish an association
 9 between the mount and the particular statistical data structure;
 10 instructions for causing one or more processors to determine in which VOSE
 11 of the plurality of VOSEs the second process executes; and
 12 instructions for causing one or more processors to establish an association
 13 between the particular statistical data structure and a VOSE in which
 14 the second process executes.

1 13. The machine-readable medium of claim 10, further comprising:
 2 instructions for causing one or more processors to establish an association between a
 3 central processing unit (CPU) and the particular statistical data structure;
 4 instructions for causing one or more processors to establish an association between
 5 the CPU and a resource pool;
 6 instructions for causing one or more processors to receive, from a second process, a
 7 request to bind a particular VOSE to the resource pool; and
 8 instructions for causing one or more processors to establish an association between
 9 the particular statistical data structure and the particular VOSE.

1 14. The machine-readable medium of claim 10, further comprising:

2 instructions for causing one or more processors to receive the one or more key values
 3 from a second process that executes in a global operating system environment
 4 (OSE) that comprises the plurality of VOSEs;
 5 instructions for causing one or more processors to determine whether any statistical
 6 data structure in the set of one or more statistical data structures is associated
 7 with the global OSE; and
 8 instructions for causing one or more processors to send, to the second process,
 9 statistical data that is stored in the particular statistical data structure, if the
 10 particular statistical data structure is associated with the global OSE.

1 15. The machine-readable medium of claim 10, further comprising:
 2 instructions for causing one or more processors to receive the one or more key values
 3 from a second process that executes in a second VOSE of the plurality of
 4 VOSEs;
 5 instructions for causing one or more processors to determine whether any statistical
 6 data structure in the set of one or more statistical data structures is associated
 7 with a VOSE in which the second process executes; and
 8 instructions for causing one or more processors to send, to the second process,
 9 statistical data that is stored in the particular statistical data structure, if the
 10 particular statistical data structure is associated with a VOSE in which the
 11 second process executes.

1 16. The machine-readable medium of claim 10, further comprising:
 2 instructions for causing one or more processors to receive a request to create a second
 3 VOSE within the plurality of VOSEs;

instructions for causing one or more processors to create a second statistical data structure in response to receiving the request to create the second VOSE; and instructions for causing one or more processors to establish an association between the second statistical data structure and a first set of key values that typically are associated with a statistical data structure in a non-partitioned OSE; wherein all statistical data requests that are (a) received by processes executing within the second VOSE and (b) for statistical data that is associated with the first set of key values cause the operating system kernel instance to return statistical data that pertains only to the second VOSE.

17. The machine-readable medium of claim 16, further comprising:

instructions for causing one or more processors to receive a request to create a third VOSE within the plurality of VOSEs; instructions for causing one or more processors to create a third statistical data structure in response to receiving the request to create the third VOSE; and instructions for causing one or more processors to establish an association between the third statistical data structure and a third set of key values that typically are associated with a statistical data structure in a non-partitioned OSE; wherein all statistical data requests that are (a) received by processes executing within the third VOSE and (b) for statistical data that is associated with the second set of key values cause the operating system kernel instance to return statistical data that pertains only to the third VOSE; wherein the third VOSE is separate from the second VOSE; and wherein the third statistical data structure is separate from the second statistical data structure.

1 18. A machine-readable medium, comprising:

2 instructions for causing one or more processors to receive, from a process that

3 executes in a first virtual operating system environment (VOSE) of a plurality

4 of VOSEs controlled by a single operating system kernel instance, a request

5 for a list of statistical data structures;

6 instructions for causing one or more processors to determine in which VOSE of the

7 plurality of VOSEs the process executes;

8 instructions for causing one or more processors to select, from a plurality of statistical

9 data structures, a set of one or more statistical data structures that are

10 associated with a VOSE in which the process executes; and

11 instructions for causing one or more processors to send, to the process, a list of

12 statistical data structures that are in the set of one or more statistical data

13 structures.

1 19. An apparatus, comprising:

2 a mechanism for receiving one or more key values from a first process that executes

3 in a first virtual operating system environment (VOSE) of a plurality of

4 VOSEs controlled by a single operating system kernel instance;

5 a mechanism for selecting, from a plurality of statistical data structures, a set of one

6 or more statistical data structures that are associated with the one or more key

7 values;

8 a mechanism for determining whether any statistical data structure in the set of one or

9 more statistical data structures is associated with a VOSE in which the first

10 process executes; and

11 a mechanism for sending, to the first process, statistical data that is stored in a
 12 particular statistical data structure in the set of one or more statistical data
 13 structures, if the particular statistical data structure is associated with a VOSE
 14 in which the first process executes.

1 20. The apparatus of claim 19, further comprising:
 2 a mechanism for preventing statistical data that is stored in statistical data structures
 3 in the set of one or more statistical data structures from being sent to the first
 4 process if no statistical data structure in the set of one or more statistical data
 5 structures is associated with a VOSE in which the first process executes.

1 21. The apparatus of claim 19, further comprising:
 2 a mechanism for receiving, from a second process, a request to mount a file system;
 3 a mechanism for performing, in response to receiving the request, steps comprising:
 4 mounting the file system, thereby producing a mount;
 5 establishing an association between the mount and the particular statistical
 6 data structure;
 7 determining in which VOSE of the plurality of VOSEs the second process
 8 executes; and
 9 establishing an association between the particular statistical data structure and
 10 a VOSE in which the second process executes.

1 22. The apparatus of claim 19, further comprising:
 2 a mechanism for establishing an association between a central processing unit (CPU)
 3 and the particular statistical data structure;
 4 a mechanism for establishing an association between the CPU and a resource pool;

5 a mechanism for receiving, from a second process, a request to bind a particular
6 VOSE to the resource pool; and
7 a mechanism for establishing an association between the particular statistical data
8 structure and the particular VOSE.

1 23. The apparatus of claim 19, further comprising:

2 a mechanism for receiving the one or more key values from a second process that
3 executes in a global operating system environment (OSE) that comprises the
4 plurality of VOSEs;
5 a mechanism for determining whether any statistical data structure in the set of one or
6 more statistical data structures is associated with the global OSE; and
7 a mechanism for sending, to the second process, statistical data that is stored in the
8 particular statistical data structure, if the particular statistical data structure is
9 associated with the global OSE.

1 24. The apparatus of claim 19, further comprising:

2 a mechanism for receiving the one or more key values from a second process that
3 executes in a second VOSE of the plurality of VOSEs;
4 a mechanism for determining whether any statistical data structure in the set of one or
5 more statistical data structures is associated with a VOSE in which the second
6 process executes; and
7 a mechanism for sending, to the second process, statistical data that is stored in the
8 particular statistical data structure, if the particular statistical data structure is
9 associated with a VOSE in which the second process executes.

1 25. The apparatus of claim 19, further comprising:

2 a mechanism for receiving a request to create a second VOSE within the plurality of
3 VOSEs;

4 a mechanism for creating a second statistical data structure in response to receiving
5 the request to create the second VOSE; and

6 a mechanism for establishing an association between the second statistical data
7 structure and a first set of key values that typically are associated with a
8 statistical data structure in a non-partitioned OSE;

9 wherein all statistical data requests that are (a) received by processes executing within
10 the second VOSE and (b) for statistical data that is associated with the first set
11 of key values cause the operating system kernel instance to return statistical
12 data that pertains only to the second VOSE.

1 26. The apparatus of claim 25, further comprising:

2 a mechanism for receiving a request to create a third VOSE within the plurality of
3 VOSEs;

4 a mechanism for creating a third statistical data structure in response to receiving the
5 request to create the third VOSE; and

6 a mechanism for establishing an association between the third statistical data structure
7 and a third set of key values that typically are associated with a statistical data
8 structure in a non-partitioned OSE;

9 wherein all statistical data requests that are (a) received by processes executing within
10 the third VOSE and (b) for statistical data that is associated with the second
11 set of key values cause the operating system kernel instance to return
12 statistical data that pertains only to the third VOSE;

13 wherein the third VOSE is separate from the second VOSE; and

14 wherein the third statistical data structure is separate from the second statistical data
15 structure.

1 27. An apparatus, comprising:
2 a mechanism for receiving, from a process that executes in a first virtual operating
3 system environment (VOSE) of a plurality of VOSEs controlled by a single
4 operating system kernel instance, a request for a list of statistical data
5 structures;
6 a mechanism for determining in which VOSE of the plurality of VOSEs the process
7 executes;
8 a mechanism for selecting, from a plurality of statistical data structures, a set of one
9 or more statistical data structures that are associated with a VOSE in which
10 the process executes; and
11 a mechanism for sending, to the process, a list of statistical data structures that are in
12 the set of one or more statistical data structures.